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is an offset. The vesicle was hollow, clear and pellucid, and of a flattened circular form. At the fifty-sixth hour it had increased in size and presented a pear-shaped figure; so that now the narrow contracted tubular portion appeared the first stage in the development of the auditory nerve; the dilated portion, the auditory sac or rudimentary vestibule; and the cavity still existing in its interior and communicating with the ventricular cavity from which it arises, by means of the tubular prolongation, the auditory nerve. The aperture of communication soon becomes smaller and more contracted, and this increases as the separation between the auditory vesicle and its parent-cell takes place. At the sixty-fifth hour, besides a great increase in the size of the ear-bulb, the auditory nerve has become more distinctly formed, and is quite solidified, so that no communication can now be traced between the ventricular cavity and the vestibular sac. It is in this stage of the development of the auditory apparatus that a great similarity is to be observed between it and the normal condition of the same part in some of the lower animals. There are, in fact, now formed the two elementary portions of the auditory apparatus, the auditory nerve and the simple vestibular sac. Such is the simple condition of the organ in the Crustacea and Cephalopod Mollusks. At the seventy-second hour, the vestibular sac has lost its oval form and presents a contraction around its entire circumference. This is the first indication of the separation of the vestibule from the membranous semicircular canals which are ultimately formed from the terminal portion of the vesicle.

The minute examination of the development of these structures, of which a consecutive detail is given, leads the author to remark on the almost precise similarity in structure of the membranous labyrinth to the retina in its various stages of development, for it consists like it of a delicate fibrous mesh in the areolæ of which is deposited granular matter and numerous nucleated cells, its outer surface being composed of globular-shaped nuclei arranged similar to those covering the outer surface of the retina at an early period of its development.

From this description a marked similarity may be observed between the origin of this membrane and that of the retina. In both cases they arise as a protruded portion of the cerebral mass, being hollow and communicating with the cavity of the parent-cell. In process of time, a gradual separation takes place between them and the parts from whence they arise. They then assume a pyriform shape, but still communicate with the cerebral cavity. As, however, the nerves become solidified and the separation between them is more fully effected, then no communication can be traced between the two cavities.

3. "Tide Researches. Fourteenth Series. On the Results of continued Tide Observations at several places on the British Coasts." By the Rev. W. Whewell, D.D., F.R.S. &c.

Tide observations made at several different parts of the British

and neighbouring shores, and in some instances continued for a considerable period, having been discussed by Mr. D. Ross of the Hydrographer's Office, with great labour and perseverance, a brief statement of the results which his labours afford is here presented by Dr. Whewell.

The discussions here referred to relate to the height of high water, and the variations which this height undergoes in proceeding from springs to neaps, and from neaps to springs. It is found, by examining the observations at 120 places, and throwing the heights into curves, that the curve is very nearly of the same form at all these places. Hence the semi-mensual series of heights at any place affords a rule for the series of heights at all other places where the difference of spring height and neap height is the same. For instance, Portsmouth, where the difference of spring height and neap height is 2 ft. 8 in., is a rule for Cork, Waterford, Inverness, Bantry, Arcachan on the French coast, and other places: and the tables of the heights of high water at one of these places suffices for all the others, a constant being of course added or subtracted according to the position of the zero-point from which the heights at each place are measured.

The series of heights of high water for a semi-lunation also agrees very exactly, as to the form of the curve, with the equilibrium theory. A very simple construction is given for the determination of this curve. The properties deduced according to theory from this construction are, however, in actual cases, modified in a manner which is then described.

1. The tides in these discussions are not referred to the transit of the moon immediately preceding, but to some earlier transit, namely, the second, third, fourth or fifth preceding transit, it being found that in this way the accordance with the theory becomes more exact.

2. According to this construction, the difference of springs and neaps would be to the height of neaps above low water springs as 10 to 24, a constant ratio for all places; but in fact this ratio is different at different places: and the observations under consideration show that the ratio is smaller where the tide is smaller.

In consequence of the law of the high water, given alike by the theory and by the observations, the spring high waters are above the mean high water for a longer period than the neaps are below it.

February 7, 1850.

Sir BENJAMIN C. BRODIE, Bart., Vice-President, in the Chair.

The following papers were read:—

1. "On the development and homologies of the Molar Teeth of the Wart-Hogs (Phacochærus), with illustrations of a System of